



STIC Search Report

EIC 2800

STIC Database Tracking Number: 167927

TO: Leslie Evanisko
Location: JEFF 9A31
Art Unit: 2854
Tuesday, October 11, 2005
Case Serial Number: 10/772726

From: Michael Obinna
Location: STIC-EIC2800
Jefferson Building RM 4A58
Phone: 571-272-2663

Email: michael.obinna@uspto.gov

Search Notes

RE: Uses of metamerism in printing

Examiner Evanisko,

Attached are edited search results from the patent and non-patent databases.

The tagged items are some of the results worth your review. However, I recommend that you browse all the results.

If you would like more searching to be done on this case, or if you have questions or comments, please do not hesitate to contact me.

Respectfully,

Michael Obinna

167924

SEARCH REQUEST FORM Scientific and Technical Information Center - EIC2800
 Rev. 3/15/2004 This is an experimental format -- Please give suggestions or comments to Jeff Harrison, JEF-4B68, 272-2511.

Date 10-5-05 Serial # 10/772726 Priority Application Date _____
 Your Name LESLIE EVANSKO Examiner # 73653
 AU 2854 Phone 272-2161 Room JEF-9A31
 In what format would you like your results? Paper is the default. PAPER DISK EMAIL

If submitting more than one search, please prioritize in order of need.

The EIC searcher normally will contact you before beginning a prior art search. If you would like to sit with a searcher for an interactive search, please notify one of the searchers.

Where have you searched so far on this case?

Circle: USPT DWPI EPO Abs JPO Abs IBM TDB

Other: _____

What relevant art have you found so far? Please attach pertinent citations or Information Disclosure Statements. _____

What types of references would you like? Please checkmark:

Primary Refs _____ Nonpatent Literature _____ Other _____
 Secondary Refs _____ Foreign Patents _____
 Teaching Refs _____

What is the topic, such as the novelty, motivation, utility, or other specific facets defining the desired focus of this search? Please include the concepts, synonyms, keywords, acronyms, registry numbers, definitions, structures, strategies, and anything else that helps to describe the topic. Please attach a copy of the abstract and pertinent claims.

See attached email
 from examiner

Print Use Only

Searcher: Michael Tetzl
 Searcher Phone: 571-272-2163
 Searcher Location: STIC-EIC2800, JEF-4B68
 Date Searcher Picked Up: 10/6/05
 Date Completed: 10/11/05
 Searcher Prep/Rev Time: 660
 Online Time: 360

Type of Search

Structure (#) _____
 Bibliography ☒
 Litigation _____
 Fulltext ☒
 Patent Family _____
 Other ☒

Vendors

STN _____
 Dialog ☒
 Questel/Orbit _____
 Lexis-Nexis _____
 WWW/Internet ☒
 Other _____

4/9/2 (Item 1 from file: 350) Links

Derwent WPIX

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016322675 **Image available**

WPI Acc No: 2004-480572/200445

XRPX Acc No: N04-379083

**Security device for use on document of value e.g. banknote,
has two regions where regions exhibit same visible color under one
viewing conditions and different visible colors under another viewing
conditions**

Patent Assignee: DE LA RUE INT LTD (DELR)

Inventor: BARTHAM A; SUGDON M C; BARTHAM A M

Number of Countries: 108 Number of Patents: 003

Patent Family:

| Patent No | Kind | Date | Applicat No | Kind | Date | Week | |
|---------------|------|----------|---------------|------|----------|--------|---|
| WO 200450376 | A1 | 20040617 | WO 2003GB4795 | A | 20031106 | 200445 | B |
| AU 2003279458 | A1 | 20040623 | AU 2003279458 | A | 20031106 | 200472 | |
| EP 1567358 | A1 | 20050831 | EP 2003772406 | A | 20031106 | 200561 | |
| | | | WO 2003GB4795 | A | 20031106 | | |

Date?

Priority Applications (No Type Date): GB 200228303 A 20021204

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes

WO 200450376 A1 E 31 B41M-003/14

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ
CA CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID
IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ
NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA
UG US UZ VC VN YU ZA ZM ZW

Designated States (Regional): AT BE BG BW CH CY CZ DE DK EA EE ES FI FR
GB GH GM GR HU IE IT KE LS LU MC MW MZ NL OA PT RO SD SE SI SK SL SZ TR
TZ UG ZM ZW

AU 2003279458 A1 B41M-003/14 Based on patent WO 200450376

EP 1567358 A1 E B41M-003/14 Based on patent WO 200450376

Designated States (Regional): AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HU IE IT LI LT LU LV MC MK NL PT RO SE SI SK TR

Abstract (Basic): WO 200450376 A1

NOVELTY - The device has two regions (30, 32) where each region has a material e.g. ink which luminescence under ultraviolet irradiation, or combination of materials. The regions exhibit same visible color under one viewing conditions and different visible colors under another viewing conditions. The latter viewing conditions have a combination of visible light and light of ultraviolet wavelength.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a method of providing a security device.

USE - Used for security document and document of value e.g. banknotes, cheques, bonds, certificates, fiscal stamps, tax stamps, vouchers and brand protection.

ADVANTAGE - The device is simple to examine when inspected by someone who knows where to look, and cannot be replicated easily. The

device makes it difficult to determine combination of materials which provide required responses since under both sets of illuminating conditions, both the materials within a region will typically influence resulting color.

DESCRIPTION OF DRAWING(S) - The drawing shows a security device when viewed in visible light and combined visible light and invisible illumination respectively.

Circular background regions (30, 32)

Unprinted region (31)

Unprinted ring (33)

pp; 31 DwgNo 12A/13

Title Terms: SECURE; DEVICE; DOCUMENT; VALUE; BANKNOTE; TWO; REGION; REGION
; EXHIBIT; VISIBLE; COLOUR; ONE; VIEW; CONDITION; VISIBLE; COLOUR; VIEW;
CONDITION

Derwent Class: P75; T05

International Patent Class (Main): B41M-003/14

File Segment: EPI; EngPI

Manual Codes (EPI/S-X): T05-J

4/9/6 (Item 2 from file: 350) **Links**

Derwent WPIX

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009451829

WPI Acc No: 1993-145354/199318

XRAM Acc No: C93-064837

XRPX Acc No: N93-111062

**Certificate prodn. which is difficult to reproduce using
colour copier - by printing 1st portion with 1st colour and 2nd portion
with fluorescent ink**

Patent Assignee: EGGED ISRAEL TRANSPORT COOP SOC LTD (EGGE-N)

Inventor: HASSID A

Number of Countries: 018 Number of Patents: 002

Patent Family:

| Patent No | Kind | Date | Applicat No | Kind | Date | Week |
|------------|------|----------|-------------|------|----------|----------|
| EP 539974 | A1 | 19930505 | EP 92118496 | A | 19921029 | 199318 B |
| CA 2081437 | A | 19930502 | CA 2081437 | A | 19921026 | 199329 |

Priority Applications (No Type Date): IL 99930 A 19911101

Cited Patents: 4.Jnl.Ref; EP 428828; GB 2139955; JP 52110636; JP 55036872;
JP 55036873; JP 55146471; US 3713861; US 4118122; US 4281921; US 4325981

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes

EP 539974 A1 E 11 G03G-021/00

Designated States (Regional): AT BE CH DE DK ES FR GB GR IE IT LI LU MC
NL PT SE

CA 2081437 A G07B-017/00

Abstract (Basic): EP 539974 A

Prodn. comprises printing a 1st portion of the certificate in a 1st colour; and printing a 2nd portion in a 2nd colour. The 1st and 2nd portions have substantial colour contrast in the original and, when reproduced using a conventional copier, the colours are reproduced in colours having substantially reduced colour contrast.

The 2nd ink is pref. fluorescent and is underprinted using the same ink used in the 1st portion. The under-printing is a pattern or crossed lines and is covered in 20-60, esp. 35-45%.

USE/ADVANTAGE - Provides an inexpensive certificate which is hard or impossible to reproduce using colour photocopier.

Dwg.0/3

Title Terms: CERTIFY; PRODUCE; DIFFICULT; REPRODUCE; COLOUR; COPY; PRINT;
PORTION; COLOUR; PORTION; FLUORESCENT; INK

Derwent Class: G05; P84; S06

International Patent Class (Main): G03G-021/00; G07B-017/00

File Segment: CPI; EPI; EngPI

Manual Codes (CPI/A-N): G05-F

Manual Codes (EPI/S-X): S06-A11; S06-A20

4/9/1 (Item 1 from file: 347) **Links**

JAPIO

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04539044 **PRODUCTION OF FORGERY-PROOF COLOR PRINTED MATTER**

Pub. No.: 06-210944 [JP 6210944 A]

Published: August 02, 1994 (19940802)

Inventor: HANSUPEETAA HAUZAA

BUERUNAA HERUMUUTO GERUBAA

ABUURU IKUBARU

PIEERU MAURAA

Applicant: CIBA GEIGY AG [000947] (A Non-Japanese Company or Corporation), CH (Switzerland)

Application No.: 05-339656 [JP 93339656]

Filed: December 03, 1993 (19931203)

Priority: 92810951 [EP 92810951], EP (European Patent Office), December 03, 1992 (19921203)

International Class: [5] B41M-003/14; G03C-005/08

JAPIO Class: 29.4 (PRECISION INSTRUMENTS -- Business Machines); 29.1 (PRECISION INSTRUMENTS -- Photography & Cinematography)

27/TI,AB,AP,AU,PN,PR,K/2 (Item 2 from file: 348) Links

EUROPEAN PATENTS

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Security documents incorporating verification means
Sicherheitsdokumente mit eingebauten Echtheitsprüfungsmitteln
Documents de securite incorporant des moyens de verification

INVENTOR:

Taylor, John Charles, 8 Taylors Rd, Dural, NSW 2158, (AU)
Hardwick, Bruce Alfred, 5 Scanlons Rd, Wandong, VIC 3758, (AU)
Jackson, Wayne Kevin, 69 Darebin Rd,, Reservoir, VIC 3073, (AU)
Zientek, Paul, 546 Station Street, North Carlton, VIC 3054, (AU)
Hibbert, Cameron Rex, 15 Mulcare Crescent, Churchill, VIC 3842, (AU)

PATENT (CC, No, Kind, Date): EP 1147912 A2 011024 (Basic)
EP 1147912 A3 011107

PRIORITY (CC, No, Date): AU 96PO2892 961010

ABSTRACT EP 1147912 A3

A secure and/or valuable document, such as a banknote (1), incorporates verification means (11;21;31;41) for verifying a security feature (10;22;32;43) on the same or a different security document when the verification means and the security feature are laid over one another. Examples of verification means comprise optical lenses (11), graphic elements, optical filters (21;31), interference filters or line or dot grids (41). An optical filter may take the form of a colour tinted filter (21) for viewing a security element (22) comprising area printed with **metameric** inks on the same or a different security document. Another form of optical filter is a first transparent polarising window (31) for verifying a second transparent polarising window (32) on the same or a different security document.

...ABSTRACT a colour tinted filter (21) for viewing a security element (22) comprising area printed with **metameric** inks on the same or a different security document. Another form of optical filter is...

...SPECIFICATION patterns; and fluorescent inks, phosphorescent inks, pearlescent inks or other optically variable inks, such as **metameric** inks.

Metamerism has been described as "the property of the eye and brain to receive...

...same colour sensation (under specific lighting conditions) from two objects with different spectral energy distributions". **Metameric** inks have the unique property of appearing to change colour when viewed in different lighting conditions. For example, two inks with different **metameric** properties may appear to be of an identical colour when viewed in a particular white...

...incandescent light, or in filtered light, the two inks will appear to have different reflective **colours**, so that one **ink** is distinguishable from the other. The optical effect of inks with **metameric** properties is widely accepted as a security device which

inhibits such **counterfeiting** attempts as computer scanning and colour photocopying. Colour photocopying and colour printing is typically restricted to four different **pigments** (**black, cyan, yellow** and magenta) when attempting to match the colour of the original. In the event of...

...is not as evident in the copy when compared to the original. The use of **metameric** inks as an anti-**counterfeiting** feature or security device in security documents is also described in U.K. Patent No. GB 1407065.

One disadvantage of **metameric** inks as a security device is that they require an optical filter or other external...

...and filigree patterns may require a magnifying lens for verification. Also, Moire inducing patterns, which **produce** fringes or a Moire effect when there is interference with a superimposed similar pattern, have hitherto only been effective as an anti-**counterfeiting** device when an attempt is made to reproduce a security document by colour photocopying. Also...

...No. AU-A-87665/82 there is disclosed a security document and a method of **producing** a security document, in which opacifying coatings of ink are applied to both sides of a sheet-like substrate formed from a clear plastics film. The security document may be **produced** with some areas to which no opacifying coating is applied on both sides of the... feature or device may be so disposed that folding of the sheet about a center **line** brings the **first** and second portions into register. For an oblong sheet having a major axis and a...

...transparent, indicia-free plastics portion with concentric circular lines. A magnifying lens may alternatively be **produced** by applying an ultraviolet (UV) or otherwise curable varnish or coating which is printed with...

...of the first aspect of the invention, the security device comprises an area printed with **metameric** inks and the self-verification means comprises an optical filter for viewing the area printed with **metameric** inks. The optical filter is preferably arranged to restrict the wavelength distribution of the light that is incident on, and/or reflected from the area printed with **metameric** inks. This may be achieved by providing a colour tinted optical filter in the transparent, essentially indicia-free portion. A colour tinted transparent window **creates** a restricted or altered wavelength environment so as to reveal the colour changing properties of an image printed in **metameric** inks enabling the authentication of the banknote to be verified.

In accordance with a further...

...the optical filter is a colour tinted optical filter for viewing an area printed with **metameric** inks on the same or a different security document.

The optical filter in the transparent window may be **produced** by various processes. One process for **producing** a colour tinted optical filter is to include appropriate pigments with a polymer in the

production of a plastics film substrate to achieve an overall tint of the plastics film. In...

...possible method, a transparent plastics substrate or film may be stretched in one direction during **manufacture**. In other methods, liquid crystals may be incorporated in a transparent polymeric film which may...

...another embodiment of the invention the verification element may comprise an interference filter including a **first** set of **lines**. The security device may comprise a feature including a **second** set of **lines**, wherein an interference effect is **produced** when the verification element and the security device are brought into register by one being...

...different security document.

Moire inducing patterns consist of sets of threads or fine lines which **produce** optically variable effects when a **first** Moire inducing **pattern** is superimposed on a **second** Moire inducing **pattern** in which the threads or fine lines are inclined at an angle to the threads or fine **lines** of the **first** Moire inducing **pattern**. The transmission of light through superimposed or overlaying sets of inclined lines **produces** the appearance of dark bands known as "Talbot fringes" which may form an image.

The...

...inducing patterns has been previously proposed in security documents as a security device or anti-**counterfeiting** feature to deter **counterfeiting** by photocopying. However, in such documents, the Moire effect or fringes are only apparent on the **counterfeit** photocopied image of a security document which includes a Moire inducing pattern. In the present...

...pattern provided at another location in the same security document or in another security document, **produces** a Moire effect which is readily identifiable to verify the document.

When first and **second** Moire inducing **patterns** are provided at **two** different transversely spaced locations in a single flexible security document, the first and **second** Moire inducing **patterns** are preferably arranged in such a manner that, when the flexible security document is folded over itself to bring the Moire inducing patterns into register, the set of **lines** of the **second** Moire inducing **pattern** are inclined to the set of **lines** of the **first** Moire inducing **pattern**.

The set of lines provided in a transparent window to form a Moire inducing pattern...and 9 and comprises a flexible, sheet-like substrate 2 of transparent plastics material bearing **indicia** 3. The substrate 2 is covered over most of its upper and lower surfaces by opacifying layers. As used...

...one or more of a variety of opacifying inks which can be used in the **printing** of **banknotes** or other security documents. For

example, the layers of opacifying ink may comprise pigmented coatings...

...at the opposite end 9 of the banknote.

In the embodiment of Figures 1 and 2, the transparent, essentially **indicia**-free portion or window 5 includes self-verifying means in the form of an optical...

...which may be formed by embossing, engraving or otherwise deforming the transparent window 5 to **produce** a series of concentric circular lines.

The Fresnel lens may be formed in a printing...

...equally, a coating can be used to fill in one of the embossed surfaces to **produce** the desired optical lens. The intaglio process is commonly used for embossing, and for a distinctive ink transfer onto banknotes and other security **documents**. The Fresnel **engraving design** can be embossed into the window under high pressure and temperature in the intaglio process...

...used to transfer optically variable devices (OVDs) onto banknotes. A magnifying lens may also be **produced** by applying an ultraviolet (UV) or other energy curable varnish or coating which is printed...

...banknote 20 is therefore substantially rectangular in shape and comprises a flexible, sheet-like substrate 2 bearing **indicia** 3. The banknote 20 differs from the banknote 1 in that the security device 4 comprises an area including a **metameric** image 22 printed with **metameric** inks, and the transparent, essentially **indicia**-free portion or "window" 5 of the substrate 2 includes a self-verifying means comprising a colour tinted window or "**metameric** filter" 21.

The security device 4 includes the letters "NPA" which constitute the

metameric image 22 formed by printing different parts of the letters with different **metameric** inks. As shown in Figure 3, the letters NPA forming the **metameric** image 22 appear to be exactly the same colour to the naked eye in white...

...12, a diagonal band 23 extending across the letters 22 and printed with a different **metameric** ink from the remainder of the letters appears to be a different colour, or at least a different shade of the same colour, when viewed through the **metameric** filter 21 as shown in Figure 4.

The security device 4 printed with **metameric** inks may be printed by standard printing techniques. The optical or **metameric** filter 21 in the transparent window 5 may be provided by including an appropriate pigment or pigments in the **production** of the polymeric substrate 2 so that the transparent, essentially **indicia**-free window 5 in the **printed banknote** is colour-tinted. Alternatively, a tinted varnish may be applied over a clear, transparent and...

...and 4, the use of the transparent plastics window 5 to include an

optical or **metameric** filter 21 which may be used to reveal the colour changing properties of the **metameric** image 22 on the banknote provides a self-verifying banknote which does not require an external secondary device such as a filter or different lighting source for examining the **metameric** image to authenticate the banknote.

It will also be appreciated that a banknote including an optical or **metameric** filter in a transparent window, such as the note of Figure 3, may also be used to examine and verify another **banknote** which includes **metameric printing** or a **metameric** image as a security device.

A third embodiment of the invention shown in Figures 5...

...may have different polarisation axes so that more interesting optical patterns or effects may be **created** when the polarising windows are brought into register.

Thus, in the embodiment of Figures 5...

...used to verify a polarising window on another similar banknote.

Transparent polarising windows may be **produced** by different methods. In one possible method, a base film of transparent plastics material may be stretched in one direction during **manufacture** to **produce** a differential alignment or orientation of crystals or molecules in the plastics film. In another...

...which contains approximately micron sized droplets of a nematic liquid crystal.

Such films may be **produced** by emulsifying a polymer, water and a liquid crystal mixture, to **produce** a so-called nematic curvilinear aligned phase (NCAP) film. Other methods of **producing** PDLC films include polymerising a homogeneous solution of liquid crystal and prepolymer. As the resultant...The banknote 40 differs from the banknote 30 in that instead of polarising windows, the **first** transparent, essentially **indicia**-free portion or window 5 includes self-verifying means in the form of a **first** Moire inducing **pattern** 41 consisting of a set of closely spaced, fine **lines**, and that the **second** transparent essentially **indicia**-free portion or window 4 includes a security device in the form of a **second** Moire inducing **pattern** 42 also consisting of a set of closely spaced, fine lines.

As shown in Figure 7, the fine **lines** of the **first** Moire inducing **pattern** 41 extend substantially parallel to each other in a transverse direction across the banknote 40, and the fine **lines** of the **second** Moire inducing **pattern** extend substantially parallel to each other in the direction of the longitudinal axis of the ...

...viewed in transmitted light, a series of dark bands known as Talbot fringes 44 are **produced** which, in the folded banknote shown in Figure 8 extend diagonally. The fringes 44 may render the first and **second** Moire inducing **patterns** 41 and 42 largely indistinguishable. Alternatively, the fringes may enhance the Moire inducing patterns, **creating** a dynamic optical effect when the patterns are overlapped.

It will, however, be appreciated that the orientations of the set of **lines** of the **first** and **second** Moire inducing **patterns** 41 and 42 may vary. For instance, if the sets of **lines** in **each** Moire inducing **pattern** 41, 42 in Figure 7 were to extend diagonally parallel to the major axes of...

...and 5, then in the folded banknote 40 shown in Figure 8 the sets of **lines** in the **first** and **second** Moire inducing **patterns** 41 and 42 would be substantially perpendicular and a similar pattern of Talbot fringes would be **produced**.

It is also possible that different parts of **each** Moire inducing **pattern** 41, 42 may have different sets of lines extending in different directions so that more interesting Moire effects, possibly with Talbot fringes forming predetermined shapes or images, may be **produced** when the windows 4 and 5 are brought into register in the folded banknote.

The...

...or offset printing process.

In the embodiment of Figures 7 and 8, the first and **second** Moire inducing **patterns** 41 and 42 in the transparent windows 5 and 4 together constitute a self-verifying...

...require an external optical device or apparatus for verification. Further, while a banknote incorporating a **first** Moire inducing **pattern** in a transparent window may be used to verify another Moire inducing pattern in a...

...a flexible security document, such as a banknote, for instance by twisting the document to **create** a dynamic variation in the observed effect, rather than a static effect **produced** by viewing in only one orientation. For example, the amount of light transmitted by polarising...

...forming the security device, and in the case of Moire inducing patterns, the Moire effect **created** by overlapping patterns may shift or experience a frequency change as the **two** Moire inducing **patterns** are twisted or rotated relative to one another.

In a further embodiment of the invention...

...advantage that they may be formed relatively inexpensively in a one step or two step **manufacturing** process. The self-verification means and the security devices in many instances can be formed...

...CLAIMS and/or valuable document as claimed in claim 6 wherein the verification element includes a **first** set of **lines** (41) and the security feature includes a **second** set of **lines** (42).

15. A secure and/or valuable document as claimed in claim 14 wherein the first and **second** sets of **lines** (41;42) **produce** an interference effect when the verification element and the security feature are laid over one...

...performed.

21. A security document (20;30;40) comprising a sheet formed from a substrate (2) bearing **indicia** (3), said sheet having an essentially indicia-free portion (5) of transparent plastics material, wherein...

...filter is a colour tinted optical filter (21) for viewing an area (22) printed with **metameric** inks on the same or a different security document.

23. A security document according to claim 21 or claim 22 wherein the optical or interference filter (21) is arranged to **create** a restricted or altered wavelength environment to reveal colour changing properties of the security element filter (21) is **produced** by including pigments with a polymer in the **production** of a plastics film substrate (2) to colour tint the substrate (2).

25. A security...

...31;32) is formed by stretching the transparent plastics substrate (2) in one direction during **manufacture**.

30. A security document according to any one of claims 26 to 28 wherein the...

...32. A security document according to claim 21 wherein the interference filter (41) includes a **first** set of **lines**.

33. A security document according to claim 32 wherein the security element (42) includes a **second** set of **lines** and an interference effect is **produced** when the verification element (41) and the security element (42) on the same or a...

INVENTOR:

EP 935535 B1 030212

WO 98013211 980402

PRIORITY (CC, No, Date): AU 96PO2602 960926

...SPECIFICATION 300 659 as related document) there is disclosed a security document and a method of **producing** a security document, in which opacifying coatings of ink are applied to both sides of a sheet-like substrate formed from a clear plastics film. The security document may be **produced** with some areas to which no opacifying coating is applied on both sides of the...

...security device.

According to another aspect of the invention, there is provided a method of **producing** a security document comprising the steps of:

providing a sheet-like substrate of clear plastics...embossings; diffracting gratings; optically variable devices; coloured, fluorescent, phosphorescent and pearlescent inks and optically variable **inks**; **metameric inks**, and **coloured** filters which may be used to view such inks.

When the security device comprises a...

...one or more of a variety of opacifying inks which can be used in the **printing of banknotes** or other security documents. For example, the layers of opacifying ink may comprise pigmented coatings...

...fine lines, micro-text, portraits or other images. The printed security feature may also be **produced** by including additives in the ink used to print the feature to **create** optical effects which can be used to enhance or add extra anti-**counterfeiting** security to the pattern or text. Thus, the inks used to print the security feature... covered by one or more layers of opacifying ink 13 and 14, is difficult to **counterfeit**, whilst being readily inspectable in the half-window area. Another advantage of the invention is...

...coatings and is a distinct advantage over paper based fibrous layers.

A preferred method of **producing** a security document in accordance with the invention comprises the following steps:

(a) providing the...1 and 4 in that it includes a front-to-back registration device comprising a **first pattern** 40 applied on the first, lower surface 11 of the clear plastics substrate 10 and a **second pattern** 50 applied on the second, upper surface 12 of the substrate 10.

The patterns 40...

...in transmission from position A, and possibly also from position B, the combination of the **two** sets of **lines** 41 and 51 can

product a Moire pattern due to interference effects. The security document of Figure 6 is very difficult to **counterfeit** because the nature of the Moire pattern **produced** by the security device 40, 50 depends upon the predetermined spacing between the lines 41...

...clear polymer substrate 10 separating the patterns 40 and 50.

In a preferred method of **producing** the security document of Figure 6, the series of lines 41 of pattern 40 may...

...window 18.

Another type of front-to-back registration device may include an area of **metameric** ink printed on the first lower surface of the substrate with a coloured layer applied...

...upper surface of the substrate to form a coloured filter for viewing the area of **metameric** ink.

Further features of the half-window concept of the present invention which assist in preventing **counterfeiting** are that:

(i) the surface of the half-window is reflective in incident light, and...

...CLAIMS A security document according to claim 15 wherein the security device includes an area of **metameric** ink.

17. A security document according to claim 16 wherein the area of **metameric** ink is applied to the first surface (11) of the substrate (10) and a coloured...

...12) of the substrate (10) to form a coloured filter for viewing the area of **metameric** ink.

18. A security document according to any one of claims 1 to 10 wherein...

...of a stripe or thread (30) weaving through the substrate (10).

21. A method of **producing** a security document (1) comprising the steps of:

29/TI,AB,AP,AU,PN,PR,K/7 (Item 3 from file: 349) **Links**

PCT FULLTEXT

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SECURITY DEVICE

DISPOSITIF DE SECURITE

Patent Applicant/Inventor:

DRINKWATER Kenneth John, 45 Ashburnham Road, Richmond, Surrey TW10 7NJ,
GB, GB (Residence), GB (Nationality), (Designated only for: US)

ANTON Marianne Michelle, 25 Magnolia Way, Fleet, Hants GU13 9JZ, GB, GB
(Residence), GB (Nationality), (Designated only for: US)

KAY Ralph, 1 Wallins Copse, Chineham, Basingstoke, Hampshire RG24 8RQ, GB
, GB (Residence), GB (Nationality), (Designated only for: US)

Patent and Priority Information (Country, Number, Date):

Patent: WO 200107268 A1 **20010201** (WO 0107268)

Priority Application: GB 9917442 19990723

English Abstract

A security device comprises an optically variable effect generating structure (3, 4). An obscuring layer (7) is located, in use, between the optically variable effect generating structure and a substrate (8) to which the device is secured. A colour layer (6) is also included which exhibits one or more predetermined colours when viewed under certain viewing conditions from the side of the device remote from the obscuring layer. The obscuring layer (7) is substantially opaque under the said certain viewing conditions.

French Abstract

L'invention concerne un dispositif de securite qui comprend une structure (3, 4) generant un effet pouvant varier de maniere optique. En service, une couche obscurcissante (7) est placee entre la structure generant l'effet pouvant varier, de maniere optique, et un substrat (8) auquel le dispositif est fixe. Une couche de couleur (6) est egalement prevue, qui presente une ou plusieurs couleurs predeterminees, vues selon certaines conditions depuis le cote du dispositif eloigne de la couche obscurcissante. Cette couche obscurcissante (7) est sensiblement opaque dans lesdites conditions de visualisation.

Patent and Priority Information (Country, Number, Date):

Patent: ...**20010201**

Main International Patent Class: **B42D-015/10**

Fulltext Availability:

Detailed Description

Publication Year: **2001**

Detailed Description

... security

device is provided. This is particularly because non security papers used in many security **document** applications (tickets, tax **stamps**, etc.) tend to be UV bright and naturally fluoresce strongly so masking the fluorescent feature...

...usually based on UV dull papers or

substrates ie they do not respond under UV **light**. These are expensive and for many security applications e.g.

labels, substrates such as paper are used but these are optically active and fluoresce strongly under UV **light**. if a fluorescent material is included in one of the layers of the device, that material fluorescing in response to UV **light**, a problem arises when the underlying substrate is also sensitive to UV **light** and also fluoresces brightly.

In this situation, the underlying fluorescence can obscure the desired fluorescence...

...conflicting response due to the underlying substrate under the said viewing conditions (for example UV **irradiation**).

The obscuring layer may also include one or more **colours different** from the predetermined **colour(s)** of the colour layer. The effect of this is that when the security device...

...seen through the optically variable effect. The result is a highly secure device which exhibits **different colours** when viewed under **different** viewing conditions and is very hard to **counterfeit**.

The optically variable effect generating structure can take any conventional form. Typically, the...

...example, from an aluminium layer. This partial demetallised metal (e.g.

aluminium) layer can be **created** using a number of demetallisation processes known in the art. Typically, the first layer will...

...intermediate layers to be provided.

In the preferred examples, the "certain viewing conditions" correspond to **irradiation** under UV **light** with the resultant colour(s) being in the form of fluorescence visible either within the...each other or even overlap to generate a continuous layer. Those sections may have the **same** or **different colours** by including one or more pigments in the sections.

The optically variable effect will typically...

...the colour layer will only be detectable under the certain viewing conditions such as UV **irradiation**. This therefore provides a second,

covert level of authentication. Where the colour layer generates a...

...energy input forms include thermochromic inks responding to temperature change, photochromic inks responding to selected **light** wavelength input, optically variable inks magnetic inks responding to electromagnetic fields, phosphor inks, anti-stokes...

...licences, cheques, identity cards, plastic cards, banknotes, tickets, bonds, share certificates, vouchers, passes, permits, electrostatic **photocopies**, electrostatic **laser printed** materials, brand authentication labels and other documents and packaging, serial numbering slips, quality control certificates...resin incorporating a fluorescent material, i.e. a material which fluoresces in response to UV **irradiation**, that fluorescence typically being in the visible range.

Finally, a third or obscuring layer 7...

...also possible for example with cold transfer foils or for label applications) which contains a **coloured pigment** such as a red pigment. As explained above, the constituents of the layer 7 are...

...effect of the underlying substrate to which the security device is applied, in response to **irradiation** to which materials in the layer 6 respond, is obscured.

In an alternative approach, the...

...may be rolled on.

In use, when this security device is viewed under normal viewing **conditions** (white **light**) the hologram generated by the surface relief 4 and partially metallised areas 5 will be...

...the gaps between the metallisation regions S.

When the security device is viewed under UV **light**, this will cause the fluorescent material in the layer 6 to fluoresce green which can...

...8 may be "UV bright" and generate a strong response in the presence of UV **irradiation**, this will not be seen in the region of the security device since it will...

...pigments and

luminescent materials could be used. For example, covert machine readable features could be **produced** by using phosphorescent pigments with known decay times.

As mentioned above, the holographic image which...

...as a pattern, for example of lines of dots or small symbols or as a **design** made up of **two** or more different luminescent, particularly fluorescent, materials such as a material which fluoresces red under...

...or the like. Prior to printing the layer 15, further indicia have been printed using **black ink** or the **like** as shown at 16 to achieve additional security.

Finally, an adhesive layer 17 is coated...

27/TI,AB,AP,AU,PN,PR,K/12 (Item 5 from file: 349) **Links**

PCT FULLTEXT

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SELF-VERIFYING SECURITY DOCUMENTS
DOCUMENTS DE SECURITE A AUTO-VERIFICATION

Inventor(s):

TAYLOR John Charles,
HARDWICK Bruce Alfred,
JACKSON Wayne Kevin,
ZIENTEK Paul,
HIBBERT Cameron Rex,

Patent and Priority Information (Country, Number, Date):

Patent: WO 9815418 A1 **19980416**

Priority Application: AU 962892 19961010

English Abstract

A self-verifying security document, such as a banknote (1) comprises a flexible sheet formed from a plastics substrate (2) bearing **indicia** (3). The sheet has a window (5) of transparent plastics material which includes self-verification means (11) for verifying a security device (4) provided at a laterally spaced second portion of the sheet when the sheet is bent or folded to bring the window (5) into register with the security device (4). The self-verification means may be an optical lens (11) for reading an area of microprinting (10). In another embodiment, the self-verification means may be an optical filter (21) for viewing an area (22) printed with **metameric** inks. In other embodiments, the self-verification means and the security device (4) may be polarising windows (31, 32) or Moire inducing patterns (41, 42).

French Abstract

L'invention se rapporte a un document de securite a auto-verification, tel qu'un billet (1) de banque, qui comprend une feuille flexible constituee d'un substrat (2) en plastique comportant des inscriptions (3). La feuille comprend une fenetre (5) constituee d'un materiau plastique transparent, qui inclut un dispositif (11) d'auto-verification servant a verifier un dispositif (4) de securite fourni sur une seconde partie lateralement espacee de la feuille lorsque celle-ci est pliee de facon que la fenetre (5) coincide exactement avec le dispositif (4) de securite. Le dispositif d'auto-verification peut etre une lentille (11) optique servant a lire une zone d'impression (10) en micro-caracteres. Dans un autre mode de realisation, le dispositif d'auto-verification peut etre un filtre (21) optique servant a visualiser une zone (22) imprimee avec des encres metameriques. Dans d'autres modes de realisation, le dispositif de verification et le dispositif (4) de securite peuvent etre une fenetre (31, 32) de polarisation ou des motifs (41, 42) moires.

Patent and Priority Information (Country, Number, Date):

Patent: ...**19980416**

Fulltext Availability:

Detailed Description

Claims

English Abstract

...document, such as a banknote (1) comprises a flexible sheet formed from a plastics substrate (2) bearing **indicia** (3). The sheet has a window (5) of transparent plastics material which includes self-verification...

...verification means may be an optical filter (21) for viewing an area (22) printed with **metameric** inks. In other embodiments, the self-verification means and the security device (4) may be...

Publication Year: 1998

Detailed Description

... patterns; and fluorescent inks, phosphorescent inks, pearlescent inks or other optically variable inks, such as **metameric** inks.

Metamerism has been described as "the property of the eye and brain to receive...

...same colour sensation (under specific lighting conditions) from two objects with different spectral energy distributions". **Metameric** inks have the unique property of appearing to change colour when viewed in different lighting conditions. For example, two inks with different **metameric** properties may appear to be of an identical colour when viewed in a particular white...

...incandescent light, or in filtered light, the two inks will appear to have different reflective **colours**, so that one **ink** is distinguishable from the other. The optical effect of inks with **metameric** properties is widely accepted as a security device which inhibits such **counterfeiting** attempts as computer scanning and colour photocopying.

Colour photocopying and colour printing is typically restricted to four different **pigments** (**black, cyan, yellow** and magenta) when attempting to match the colour of the original. In the event of...

...is not as evident in the copy when compared to the original. The use of **metameric** inks as an anti-counterfeiting feature or security device in security documents is also described in U.K. Patent No. GB 1407065.

One disadvantage of **metameric** inks as a security device is that they require an optical filter or other external...

...and filigree patterns may require a magnifying lens for verification. Also, Moire inducing patterns, which **produce** fringes or a Moire effect when there is interference with a superimposed similar pattern, have...

...No. AU-A-87665/82 there is disclosed a security document and a method of **producing** a security document, in which opacifying coatings of ink

are applied to both sides of a sheet-like substrate formed from a clear plastics film. The security document may be **produced** with some areas to which no opacifying coating is applied on both sides of the...

...one opacifying layer therefore only partially covers the surface of the substrate to leave said **first** portion essentially **indicia**-free.

The opacifying layer or at least one of the opacifying layers on either side...

...and second portions may be so disposed that folding of the sheet about a center **line** brings the **first** and second portions into register. For an oblong sheet having a major axis and a...indicia-free plastics portion with
gr
concentric circular lines. A magnifying lens may alternatively be **produced** by applying an ultraviolet (UV) or otherwise curable varnish or coating which is printed with...

...of the first aspect of the invention, the security device comprises an area printed with **metameric** inks and the self-verification means comprises an optical filter for viewing the area printed with **metameric** inks.

The optical filter is preferably arranged to restrict the wavelength distribution of the light that is incident on, and/or reflected from the area printed with **metameric** inks.

This may be achieved by providing a colour tinted optical filter in the transparent, essentially **indicia**-free portion. A colour tinted transparent window **creates** a restricted or altered wavelength environment so as to reveal the colour changing properties of an image printed in **metameric** inks enabling the authentication of the 30 banknote to be verified.

In accordance with...

...indicia-free portion includes a colour tinted optical filter for viewing an area printed with **metameric** inks on the same or a different security document.

The optical filter in the transparent window may be **produced** by various processes. One process for **producing** a colour tinted optical filter is to include appropriate pigments with a polymer in the **production** of a plastics film substrate to achieve an overall tint of the plastics film. In...possible method, a transparent plastics substrate or film may be stretched in one direction during **manufacture**. In other methods, liquid crystals may be incorporated in a transparent polymeric film which may...

...In another embodiment of the invention the self-verification means comprises a feature including a **first** set of **lines** and the

security device comprises a feature including a **second** set of **lines**, wherein an interference effect is **produced** when the security document is bent or folded to bring the self-verifying means and ...

...different security document.

Moire inducing patterns consist of sets of threads or fine lines which **produce** optically variable effects when a **first** Moire inducing **pattern** is superimposed on a **second** Moire inducing **pattern** in which the threads or fine lines are inclined at an angle to the threads or fine **lines** of the **first** Moire inducing **pattern**. The transmission of light through superimposed or overlaying sets of inclined lines **produces** the appearance of dark bands known as "Talbot fringes" which may form an image.

The...

...inducing patterns has been previously proposed in security documents as a security device or anti-**counterfeiting** feature to deter **counterfeiting** by photocopying. However, in such documents, the Moire effect or fringes are only apparent on the **counterfeit** photocopied image of a security document which includes a Moire inducing pattern. In the present...

...pattern provided at another location in the same security document or in another security document, **produces** a Moire effect which is readily identifiable to verify the document.

When first and **second** Moire inducing **patterns** are provided at **two** different transversely spaced locations in a single flexible security document, the first and **second** Moire inducing **patterns** are preferably arranged in such a manner that, when the flexible security document is folded over itself to bring the Moire inducing patterns into register, the set of **lines** of the **second** Moire inducing **pattern** are inclined to the set of **lines** of the **first** Moire inducing **pattern**.

The set of lines provided in a transparent window to form a Moire inducing pattern...and 9 and comprises a flexible, sheet-like substrate 2 of transparent plastics material bearing **indicia** 3. The substrate 2 is covered over most of its upper and lower surfaces by opacifying layers. As used...one or more of a variety of opacifying inks which can be used in the **printing** of **banknotes** or other security documents. For example, the layers of opacifying ink may comprise pigmented coatings...
...which may be formed by embossing, engraving or otherwise deforming the transparent window 5 to **produce** a series of concentric circular lines.

The Fresnel lens may be formed in a printing...

...equally, a coating can be used to fill in one of the embossed surfaces

to

produce the desired optical lens. The intaglio process is commonly used for embossing, and for a distinctive ink transfer onto banknotes and other security **documents**. The Fresnel **engraving design** can be embossed into the window under high pressure and temperature in the intaglio process...

...used to transfer optically variable devices (OVDs) onto banknotes. A magnifying lens may also be **produced** by applying an ultraviolet (UV) or other energy curable varnish or coating which is printed...banknote 20 is therefore substantially rectangular in shape and comprises a flexible, sheet-like substrate **2** bearing **indicia** 3. The banknote 20 differs from the banknote 1 in that the security device 4 comprises an area including a **metameric** image 22 printed with **metameric** inks, and the transparent, essentially indicia-free portion or "window" 5 of the substrate 2 includes a self-verifying means comprising a colour tinted window or "**metameric** filter" 2 1.

The security device 4 includes the letters NPA" which constitute the **metameric** image 22 formed by printing different parts of the letters with different **metameric** inks. As shown in Figure 3, the letters NPA forming the **metameric** image 22 appear to be exactly the same colour to the naked eye in white...

...12, a diagonal band 23 extending across the letters 22 and printed with a different **metameric** ink from the remainder of the letters appears to be a different colour, or at least a different shade of the same colour, when viewed through the **metameric** filter 21 as shown in Figure 4.

The security device 4 printed with **metameric** inks may be printed by standard printing techniques. The optical or **metameric** filter 21 in the transparent window 5 may be provided by including an appropriate pigment or pigments in the **production** of the polymeric substrate 2 so that the transparent, essentially indiciafree window 5 in the **printed banknote** is colour-tinted. Alternatively, a tinted varnish may be applied over a clear, transparent and...

...and 4, the use of the transparent plastics window 5 to include an optical or **metameric** filter 21 which may be used to reveal the colour changing properties of the **metameric** image 22 on the banknote provides a self-verifying banknote which does not require an external secondary device such as a filter or different lighting source for examining the **metameric** image to authenticate the banknote.

It will also be appreciated that a banknote including an optical or **metameric** 1 5 filter in a transparent window, such as the note of Figure 3, may also be used to examine and verify another **banknote** which includes **metameric** printing or a **metameric**

image as a security device.

A third embodiment of the invention shown in Figures 5...may have different polarisation axes so that more interesting optical patterns or effects may be **created** when the polarising windows are brought into register.

Thus, in the embodiment of Figures 5...

...used to verify a polarising window on another similar banknote.

Transparent polarising windows may be **produced** by different methods. In one possible method, a base film of transparent plastics material may be stretched in one direction during **manufacture** to **produce** a differential alignment or orientation of crystals or molecules in the plastics film. In another...

...which contains approximately micron sized droplets of a nematic liquid crystal.

Such films may be **produced** by emulsifying a polymer, water and a liquid crystal mixture, to **produce** a so-called nematic curvilinear aligned phase (NCAP) film. Other methods of **producing** PDLC films include polymerising a homogeneous solution of liquid crystal and prepolymer. As the resultant ...

...The banknote 40 differs from the banknote 30 in that instead of polarising windows, the **first** transparent, essentially **indicia**-free portion or window 5 includes self-verifying means in the form of a **first** Moire inducing **pattern** 41 consisting of a set of closely spaced, fine **lines**, and that the **second** transparent essentially **indicia**-free portion or window 4 includes a security device in the form of a **second** Moire inducing **pattern** 42 also consisting of a set of closely spaced, fine lines. As shown in Figure 7, the fine **lines** of the **first** Moire inducing **pattern** 41 extend substantially parallel to each other in a transverse direction across the banknote 40, and the fine **lines** of the **second** Moire inducing **pattern** extend substantially parallel to each other in the direction of the longitudinal axis of the ...

...viewed in transmitted light, a series of dark bands known as Talbot fringes 44 are **produced** which, in the folded banknote shown in Figure 8 extend diagonally. The fringes 44 may render the first and **second** Moire inducing **patterns** 41 and 42 largely indistinguishable. Alternatively, the fringes may enhance the Moire inducing patterns, **creating** a dynamic optical effect when the patterns are overlapped.

It will, however, be appreciated that the orientations of the set of

lines of the **first** and **second** Moire inducing patterns 41 and 42 may vary. For instance, if the sets of lines in **each** Moire inducing pattern 41, 42 in Figure 7 were to extend diagonally parallel to the major axes of...

...and 5, then in the folded banknote 40 shown in Figure 8 the sets of lines in the **first** and **second** Moire inducing patterns 41 and 42 would be substantially perpendicular and a similar pattern of Talbot fringes would be **produced**.

It is also possible that different parts of **each** Moire inducing pattern 41, 42 may have different sets of lines extending in different directions so that more interesting Moire effects, possibly with Talbot fringes forming predetennined shapes or images, may be **produced** when the windows 4 and 5 are brought into register in the folded banknote.

The...

...or offset printing process.

In the embodiment of Figures 7 and 8, the first and **second** Moire inducing patterns 41 and 42 in the transparent windows 5 and 4 together constitute a self-verifying...

...require an external optical device or apparatus for verification. Further, while a banknote incorporating a **first** Moire inducing pattern in a transparent window may be used to verify another Moire inducing pattern in a...

...a flexible security document, such as a banknote, for instance by twisting the document to **create** a dynamic variation in the observed effect, rather than a static effect **produced** by viewing in only one orientation. For example, the amount of light transmitted by polarising...

...forming the security device, and in the case of Moire inducing patterns, the Moire effect **created** by overlapping patterns may shift or experience a frequency change as the **two** Moire inducing patterns are twisted or rotated relative to one another.

In a further embodiment of the invention...advantage that they may be formed relatively inexpensively in a one step or two step **manufacturing** process. The self-verification means and the security devices in many instances can be formed...

Claim

... opacifying layer only partially covers the surface of the substrate to leave at least said **first** portion essentially **indicia**-free.

4 A security document according to claim 2 or claim 3 wherein the at...

...first and second portions are so disposed that folding of the sheet

about a centre **line** brings the **first** and second portions into register.

6 A security device according to any one of the...one of claims I to 8 wherein the security device comprises an area of the **sheet printed** with **metameric** inks, and the self-verification means comprises an optical filter for viewing the area printed with **metameric** inks.

18 A security document comprising a sheet formed from a substrate bearing indicia, said...

...indicia-free portion includes a colour tinted optical filter for viewing an area printed with **metameric** inks on the same or a different security document.

19 A security document according to claim 17 or claim 18 wherein the optical filter is arranged to **create** a restricted or altered wavelength environment to reveal colour changing properties of the area printed with **metameric** inks.

20 A security document according to any one of claims 17 to 19 wherein the optical filter is **produced** by including pigments with a polymer in the **production** of a plastics film substrate to colour tint the substrate.

21 A security document according...each polarising window is formed by stretching the transparent plastics substrate in one direction during **manufacture**.

27 A security document according to any one of claims 22 to 25 wherein the...

...one of claims I to 8 wherein the selfverifying means comprises a feature including a **first** set of **lines** and the security device comprises a feature including a **second** set of **lines**, wherein an interference effect is **produced** when the security document is bent or folded to bring the selfverifying means and the...

...folded over itself to bring the selfverifying means and the security device into register, the **second** set of **lines** is inclined to the **first** set of **lines**.

32 A security document according to any one of claims 29 to 31 wherein the first and **second** sets of **lines** are printed on the first and second portions of the sheet.

33 A security document according to any one of claims 29 to 31 wherein the first and **second** sets of **lines** are embossed or engraved on the first and second portions of the sheet.

34 A...

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[File 2] INSPEC 1969-2005/Oct W1
[File 6] NTIS 1964-2005/Sep W4
[File 8] Ei Compendex(R) 1970-2005/Oct W1
[File 34] SciSearch(R) Cited Ref Sci 1990-2005/Oct W1
[File 434] SciSearch(R) Cited Ref Sci 1974-1989/Dec
[File 35] Dissertation Abs Online 1861-2005/Sep
[File 65] Inside Conferences 1993-2005/Oct W2
[File 94] JICST-EPlus 1985-2005/Aug W2
[File 99] Wilson Appl. Sci & Tech Abs 1983-2005/Sep
[File 144] Pascal 1973-2005/Oct W1
[File 344] Chinese Patents Abs Aug 1985-2005/May
[File 347] JAPIO Nov 1976-2005/Apr(Updated 050801)
[File 350] Derwent WPIX 1963-2005/UD,UM &UP=200564
[File 371] French Patents 1961-2002/BOPI 200209
[File 23] CSA Technology Research Database 1963-2005/Sep
[File 103] Energy SciTec 1974-2005/Aug B2
[File 95] TEME-Technology & Management 1989-2005/Sep W1
[File 248] PIRA 1975-2005/Sep W3
[File 60] ANTE: Abstracts in New Tech & Engineer 1966-2005/Sep

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| Set | Items | Postings | Description |
|-----|----------|----------|---|
| S1 | 21472201 | 46906579 | S PREPAR????? OR MANUFACTUR????? OR PRODUC????? OR CREAT????? OR MAKING OR FABRICAT????? OR MASS() PRODUC????? |
| S2 | 173317 | 467025 | S (COPY????? OR PHOTOCOPY????? OR PHOTO()COPY????? OR XEROX????? OR REPRODUC????? OR COUNTERFEIT????? OR PRINT????? OR FORG????? OR FACSIMILE OR PHOTOSTAT????? OR TAMPER?????) (3N) PROOF????? OR FORG????? OR COUNTERFEIT????? |
| S3 | 1062165 | 3206185 | S (PAPER? ? OR ARTICLE? ? OR SUBSTRATE? ? OR FABRIC????? OR MEDIUM OR MEDIA OR SHEET????? OR DOCUMENT????? OR MATERIAL? ? OR STATIONERY OR CARD? ? OR STOCK? ? OR TEXT????? OR SUBSTANCE?? OR CURRENC????? OR BANKNOTE? ? OR BANK()NOTE? ? OR BILL? ? OR CHECK? ? OR CHEQUE? ? OR CERTIFICATE? ? OR BOND? ? OR VOUCHER? ?) (3N) (PRINT????? OR ENGRAV????? OR IMPRINT????? OR MARK????? OR OFFSET??? OR STAMP????? OR DESIGN????? OR ETCH????? OR INSCRIB????? OR EMBED????? OR INSCRIB?????) |
| S4 | 163543 | 679954 | S (COLOUR????? OR COLOR????? OR TINT????? OR CYMK OR CYAN OR YELLOW OR MAGENTA OR BLACK) (3N) (INK????? OR TONER? ? OR DIE? ? OR DYE????? OR PIGMENT????? OR STAIN?????) |
| S5 | 17991699 | 42777606 | S MARK????? OR PATTERN????? OR DESIGN????? OR LOGO? ? OR SYMBOL????? OR EMBLEM????? OR STAMP????? OR SCORE? ? OR LINE? ? OR STRIP? ? OR CHEVRON? ? OR INSIGNIA? ? OR INDICI?? OR SECUR????? (3N) (DEVICE? ? OR MEANS OR MECHANISM) |
| S6 | 979 | 1672 | S METAMERIC??? OR METAMETRIC??? |
| S7 | 106973 | 289112 | S (SAME OR SIMILAR OR LIKE? ? OR IDENTICAL??? OR INDISTINGUISH????? OR ANALOGOUS OR UNDIFFEREN??????? OR MATCH????? OR CONSTANT??? OR UNCHANG??????? OR UNIFORM????? OR CONSISTENT?????) (3N) (COLOUR????? OR COLOR????? OR TINT????? OR DYE? ? OR DYEING OR STAIN????? OR CYMK OR CYAN OR YELLOW OR MAGENTA OR BLACK) |
| S8 | 178308 | 570699 | S (DIFFEREN??????????? OR DISSIMILAR OR CLASH????? OR CONTRAST????? OR MISMATCH????? OR DISTINCT????? OR SEPARAT?????) (3N) (COLOUR????? OR COLOR????? OR TINT????? OR DYE? ? OR DYEING OR STAIN????? OR CYMK OR CYAN OR YELLOW OR MAGENTA OR BLACK) |
| S9 | 74694 | 314510 | S (COPIER? ? OR PRINT????? OR MIMEOGRAPH??? OR PHOTOCOP??????? OR DUPLICATE?????) (3N) (LIGHT??? OR ILLUMIN????????? OR LAMP? ? OR LED? ? OR LASER? ?) |
| S10 | 5677479 | 15728521 | S LIGHT??? OR LIGHT()UP OR BRIGHTEN????? OR IRRADIAT????? OR ILLUMIN????? |
| S11 | 1557967 | 4509408 | S (FIRST OR SECOND????? OR BOTH OR EACH OR TWIN OR 2 OR TWO OR 2ND OR DOUBLE OR PAIR? ?) (3N) (MARK????? OR PATTERN????? OR DESIGN????? OR LOGO? ? OR SYMBOL????? OR EMBLEM????? OR STAMP????? OR SCORE? ? OR LINE? ? OR STRIP? ? OR CHEVRON? ? OR INSIGNIA? ? OR INDICI??) |
| S12 | 11 | 30 | S PAPER(5N)METAMERIC??? |
| S13 | 36157 | 86728 | S PAPER(5N)MARK????? |
| S14 | 48882 | 124725 | S LIGHT??? (3N) CONDITION??? |
| S15 | 75202 | 99354 | S IC=(B41M-001/14 OR B41M-003/14 OR B42D-015/10 OR B41J-005/30 OR G07B-017/00 OR B44F-001/12 OR G03C-005/08 OR B42D-015/00 OR B42D-101/00 OR B42D-103/00 OR B42D-115/00 OR B42D-117/00 OR B42D-11/00 OR B42D-217/00 OR B42D-225/00 OR B44F-000/00 OR G07D-007/00) |
| S16 | 84201 | 89973 | S MC=(S06-C01 OR T01-J05A OR T05-C05 OR S06-A11A OR S06-A14B OR S06-A16A OR S06-A20 OR T05-J) |
| S17 | 134 | 2860 | S S1 AND S2 AND S3 AND S4 AND S5 |
| S18 | 0 | 0 | S S17 AND S6 AND S7 AND S8 |
| S19 | 2 | 40 | S S17 AND S6 |
| S20 | 82 | 1088 | S S6 AND S7 AND S8 |
| S21 | 1 | 20 | S S20 AND S14 |
| S22 | 67522 | 413757 | S S3 AND S11 |
| S23 | 2 | 41 | S S22 AND S6 |
| S24 | 3 | 90 | S S2 AND S11 AND S5 AND S14 |
| S25 | 11 | 41 | S S12 AND PY<=2004 |
| S26 | 764 | 8293 | S S7 AND S8 AND S11 |
| S27 | 28 | 556 | S S26 AND S15 |
| S28 | 11 | 168 | S S26 AND S16 |
| S29 | 28 | 722 | S S27 AND PY<=2004 |
| S30 | 12 | 143 | S S2 AND S3 AND S6 |

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| | | | |
|-----|----|-----|--|
| S31 | 13 | 77 | S S13 AND S14 |
| S32 | 12 | 64 | S S9 AND S6 |
| S33 | 4 | 43 | S S6 AND S14 |
| S34 | 14 | 82 | S S6 AND S15 |
| S35 | 2 | 10 | S S6 AND S16 |
| S36 | 1 | 20 | S S21 NOT S19 |
| S37 | 2 | 41 | S S23 NOT (S19 OR S21) |
| S38 | 2 | 46 | S S24 NOT (S19 OR S21 OR S23) |
| S39 | 11 | 41 | S S25 NOT (S19 OR S21 OR S23 OR S24) |
| S40 | 28 | 556 | S S27 NOT (S19 OR S21 OR S23 OR S24 OR S25) |
| S41 | 5 | 80 | S S28 NOT (S19 OR S21 OR S23 OR S24 OR S25 OR S27) |
| S42 | 9 | 96 | S S30 NOT (S19 OR S21 OR S23 OR S24 OR S25 OR S27 OR S28) |
| S43 | 12 | 57 | S S31 NOT (S19 OR S21 OR S23 OR S24 OR S25 OR S27 OR S28 OR S30) |
| S44 | 9 | 43 | S S32 NOT (S19 OR S21 OR S23 OR S24 OR S25 OR S27 OR S28 OR S30 OR S31) |
| S45 | 2 | 8 | S S33 NOT (S19 OR S21 OR S23 OR S24 OR S25 OR S27 OR S28 OR S30 OR S31 OR S32) |
| S46 | 5 | 25 | S S34 NOT (S19 OR S21 OR S23 OR S24 OR S25 OR S27 OR S28 OR S30 OR S31 OR S32 OR S33) |
| S47 | 0 | 0 | S S35 NOT (S19 OR S21 OR S23 OR S24 OR S25 OR S27 OR S28 OR S30 OR S31 OR S32 OR S33 OR S34) |

19/9/2 (Item 1 from file: 248) **Links**

PIRA

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00609443 **Pira Accession Number:** 20205315

Title: Optical feature mix in today's travel documents

Authors: Mercer J W

Source: Holo-pack holo-print 2001, Miami, FL, USA, 15-16 Nov. 2001, 10pp [Leatherhead, UK: Pira International, 2001, GBP110.00 (778.38) (R14131)]

Publication Year: 2001

Document Type: Conference Publication

Language: English

Pira Subfiles: Printing and Publishing (PP); Printing Abstracts (PT)

Journal Announcement: 0203

Abstract: Materials and security features such as holograms used for passports, visas and other official documents which are required to last for up to ten years, must be selected to ensure durability as well as protection against **counterfeiting**. The optical features used in such documents include substrate based features such as watermarks in **paper**, luminous **substrates**, **embedded** threads, planchettes and plastic cards. Ink based features include optically variable ink (OVI) features with an obvious shift in **colour**, metallic **inks**, Intaglio Latent Images, and **Metameric** inks which have a different appearance by laser copier or scanner. Personalisation processing is a new classification which includes laser **etch** plastic **cards**, digital encoding of portraits resolvable by the Scrambled **Indicia** or Jura process or the Digimarc **products** characterised by manipulation of individual pixels, and the IAI Image-Perf process whereby a portrait is perforated into the substrate beside the normal photo. Diffractive Optically Variable Identification Devices (DOVIDs) are widely used as either reflective, highly reflective or transparent. Biometrics, which use measurements of a specific physical attribute to identify a person are being used in some niche **markets**. Currently, holograms are not able to feature actively in biometrics but a personalised holography could be a possibility in the future.

Company Names: Pira International

Geographic Locations: North America; USA

Geographic Codes: NA; NAUSA

Descriptors: CONFERENCE; **COUNTERFEITING**; HOLOGRAPHY; PASSPORT; PERSONALISATION; SECURITY PRINTING

Section Headings: Security Printing (8615)

42/9/1 (Item 1 from file: 347) **Links**

JAPIO

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07051506 **Image available**

PRINTED MATTER FOR PREVENTING COUNTERFEIT

Pub. No.: 2001-279140 [JP 2001279140 A]

Published: October 10, 2001 (20011010)

Inventor: UCHIMURA HIROMI

TANAKA TOSHINORI

UCHIDA MICHIHARU

Applicant: PRINTING BUREAU MINISTRY OF FINANCE

Application No.: 2000-093237 [JP 200093237]

Filed: March 30, 2000 (20000330)

International Class: C09D-011/00; B41M-003/14; B42D-015/10

ABSTRACT

PROBLEM TO BE SOLVED: To provide a printed matter that is prepared with a pair of **metameric** inks and can be verified on the authenticity simply without applying a discrimination filter.

SOLUTION: This **printed** matter comprises a **substrate** having spectral reflectance that varies with temperature or added liquid and a print zone produced by printing with a pair of **metameric** inks A and B on the substrate. If the substrate is treated with the shift of temperature or the addition of a liquid to moisten, the print zone can be observed under a specific wavelength of reflection light to appear different in colors, enabling to verify on the authenticity.

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42/9/3 (Item 2 from file: 350) **Links**

Derwent WPIX

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014265241 ****Image available****

WPI Acc No: 2002-085939/200212

XRAM Acc No: C02-026599

XRFX Acc No: N02-063884

**Forgery prevention printed
paper such as passport and tickets, has
printing portions on base material formed by
metameric pair ink whose color is differed when spectral
reflection factor of base material is changed**

Patent Assignee: ZAIMUSHO INSATSUKYOKUCHO (ZAIM-N)

Number of Countries: 001 Number of Patents: 001

Patent Family:

| Patent No | Kind | Date | Applicat No | Kind | Date | Week |
|---------------|------|----------|--------------|------|----------|----------|
| JP 2001279140 | A | 20011010 | JP 200093237 | A | 20000330 | 200212 B |

Priority Applications (No Type Date): JP 200093237 A 20000330

Patent Details:

| Patent No | Kind | Lan Pg | Main IPC | Filing Notes |
|---------------|------|--------|---------------|--------------|
| JP 2001279140 | A | | 7 C09D-011/00 | |

JP 2001279140 A 7 C09D-011/00

Abstract (Basic): JP 2001279140 A

NOVELTY - The **forgery** prevention printed matter (6,10) has a base **material** (2), on which **printing** portions (3,4) are formed by **metameric** pair ink (A,B). The base material contains a material which changes the spectral reflection factor. When the spectral reflection factor of the base material is changed, the color of the **metameric** pair ink mutually differed so as to perform authentication of printed matter.

DETAILED DESCRIPTION - The color of **metameric** pair ink is the same, before changing the spectral reflection factor of base material.

USE - For preventing **forgery** of printed matter such as **paper** money, passport, credit **card**, security **card**, **stamps**, certifications and tickets.

ADVANTAGE - By performing temperature change of printed matter and observing specific wavelength of reflected light, authentication of printed matter is easily and accurately performed. Hence, the **forgery** of printed matter is prevented effectively, without using a distinction filter.

DESCRIPTION OF DRAWING(S) - The figure shows **forgery** prevention printed matter.

Base material (2)

Printing portions (3,4)

Forgery prevention printed matter (6,10)

Metameric pair ink (A,B)

pp; 7 DwgNo 1/6

Title Terms: **FORGE**; PREVENT; PRINT; PAPER; PASSPORT; TICKET;

42/9/4 (Item 3 from file: 350) **Links**

Derwent WPIX

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001911511

WPI Acc No: 1978-E0757A/197821

Inhibiting forgery in paper

printed with two inks - which merge or contrast when viewed

at directly or through filter

Patent Assignee: BRADBURY WILKINSON & CO (BRAD-N)

Inventor: HEALEY A C

Number of Countries: 001 Number of Patents: 001

Patent Family:

| Patent No | Kind | Date | Applicat No | Kind | Date | Week |
|------------|------|----------|-------------|------|------|----------|
| GB 1512018 | A | 19780524 | | | | 197821 B |

Priority Applications (No Type Date): GB 7437831 A 19740829

Abstract (Basic): GB 1512018 A

The **forgery** of **printed paper**

is inhibited by viewing the paper through a coloured filter and also without a filter. The paper consists of a **substrate** which has been **printed** with two inks to provide the same or contrasting colours when viewed without the filter and contrasting colours a differently contrasting colours, respectively, when viewed through the filter.

The sinks may be printed by direct or offset lithography, direct letter press, letter-set or intaglio. The inks may be printed separately to produce portions of an interlocking design, or printed to produce a design built up of fine lines. When viewed through the filter the word "GENUINE" for example may be seen

Title Terms: INHIBIT; **FORGE**; PAPER; PRINT; TWO; INK; MERGE; CONTRAST; VIEW; THROUGH; FILTER

Index Terms/Additional Words: METAMERIC

Derwent Class: P76

International Patent Class (Additional): B42D-015/02

File Segment: EngPI

42/9/6 (Item 2 from file: 248) **Links**

PIRA

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00644150 **Pira Accession Number:** 20234171

Title: Fighting fraud: security printing

Authors: Chamberlain M

Source: Printweek 31 July 2003, pp 20-21

ISSN: 0987-987X

Publication Year: 2003

Document Type: Journal Article

Language: English

Pira Subfiles: Printing and Publishing (PP)

Journal Announcement: 0310

Abstract: Document fraud is a major threat to governments and businesses and over 20,000 altered, **forged** or **counterfeit** cheques were intercepted by UK clearing banks in 2001. Document fraud extends to passports, driving licences, plastic cards, examination certificates, insurance certificates, and even fake utility bills. **Counterfeiting** is the illicit reproduction of a document with the intent to deceive, whereas **forgery** is the illicit alteration of a document. The Association for Payment Clearing Services has made improvements in the standards for cheque production, which must be implemented by all UK cheque **printers**. The recently issued **Cheque Design** Guidelines incorporate such factors as protection, detection, reinstatement and laser toner adhesion. The most secure documents contain many layers of security, and the more valuable a document, the more layers of security it will have. Overt deterrents make the document visually complex and difficult to copy. One covert deterrent involves the use of **metameric** pairs of inks that create complete designs under normal illumination, but are incompletely reproduced in scanners. Other covert deterrents include reactive chemicals within the paper that change colour if bleaches are applied; inks that bleed or change colour if tampered with; of fluorescent features that show if the surface is disturbed.

Geographic Locations: Europe; United Kingdom

Geographic Codes: EU; EZUKM

Descriptors: AUTHENTICATION; BANK NOTE; **COUNTERFEITING**; FRAUD; SECURITY PRINTING

Section Headings: Security Printing (8615)

42/9/9 (Item 5 from file: 248) **Links**

PIRA

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00020541 **Pira Accession Number:** 1021945 **Pira Abstract Numbers:** 02-76-01945

Title: SECURITY PRINTING

Source: COATES INKLINGS no 97.June 1976 pp 4-6

Publication Year: 1976

Document Type: Journal Article

Language: unspecified

Pira Subfiles: Printing Abstracts (PR)

Journal Announcement: 7609

Abstract: Some of the security measures adopted by printers specialising in this field are outlined and the use of special papers and inks for security printing is discussed. Various devices which are used to combat **counterfeiting** are surveyed, such as invisible inks, UV-fluorescence, **metameric** colour matches, magnetic inks, inks which bleed or change colour if tampered with, and non-copying inks for preventing unauthorised photocopying of documents.

Descriptors: BLEED; COLOUR; COLOUR MATCHING; DEVICES; DOCUMENT; FLUORESCENCE; **FORGERY**; INK; MAGNETIC; METAMERISM; NON-COPYING; PAPER; PHOTOCOPYING; PRINTER; PRINTING; SECURITY; SECURITY PRINTING; SURVEY; TAMPER

Section Headings: Printing and making special **articles** (2022)

39/9/9 (Item 1 from file: 350) **Links**
 Derwent WPIX
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014021573 **Image available**
 WPI Acc No: 2001-505787/**200156**
 XRAM Acc No: C01-152257
 XRPX Acc No: N01-375285

**Forgery prevention paper for use in securities such as
 lottery tickets, identification cards and entrance tickets, comprises
 paper wafer/fiber piece containing metamerich
 color ink, spreaded over paper base material**

Patent Assignee: TOPPAN PRINTING CO LTD (TOPP)

Number of Countries: 001 Number of Patents: 001

Patent Family:

| Patent No | Kind | Date | Applicat No | Kind | Date | Week |
|---------------|------|----------|-------------|------|----------|----------|
| JP 2001159094 | A | 20010612 | JP 99334177 | A | 19991125 | 200156 B |

Priority Applications (No Type Date): JP 99334177 A 19991125

Patent Details:

| Patent No | Kind | Lan Pg | Main IPC | Filing Notes |
|---------------|------|--------|---------------|--------------|
| JP 2001159094 | A | | 5 D21H-021/40 | |

Abstract (Basic): JP 2001159094 A

NOVELTY - The forgery prevention paper (1) comprises paper wafer or fiber piece (12) containing **metamerich** color ink, spreaded over a **paper** base material (10) containing pulp fiber.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for securities using the forgery prevention paper.

USE - For use in securities (claimed), such as gift certificates, treasure lots, lottery tickets, identification cards, passports, entrance tickets and stock certificates.

ADVANTAGE - The forgery prevention paper is easily viewable by simply passing the paper through the bottom of desired light source or filter. The paper also prevents forgery by printing techniques and color copy machines. The paper has excellent utility in securities. Thereby securities using this paper can be simply and reliably judged for their genuineness.

DESCRIPTION OF DRAWING(S) - The figure shows the cross-sectional diagram of a forgery prevention paper.

Forgery prevention paper (1)
 Paper base material (10)
 Paper wafer (12)
 pp; 5 DwgNo 1/2

Title Terms: FORGE; PREVENT; PAPER; SECURE; LOTS; TICKET; IDENTIFY; CARD; ENTER; TICKET; COMPRISE; PAPER; WAFER; PIECE; CONTAIN; METAMERIC; INK; PAPER; BASE; MATERIAL

Derwent Class: F09; P76

International Patent Class (Main): D21H-021/40

International Patent Class (Additional): B42D-015/10

File Segment: CPI; EngPI

Manual Codes (CPI/A-N): F05-A06B

40/9/13 (Item 7 from file: 350) **Links**

Derwent WPIX

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014409229 ****Image available****

WPI Acc No: 2002-229932/200229

Related WPI Acc No: 2002-229931

XRPX Acc No: N02-176867

Document anti-fraud device, e.g. for banknotes, credit-cards, etc., in which fluorescent motifs are printed on the documents that emit light of two different wavelengths making fraud more difficult

Patent Assignee: BANQUE NAT BELGIQUE SA (BANQ-N)

Inventor: SALADE M; VELDEMAN F

Number of Countries: 026 Number of Patents: 001

Patent Family:

| Patent No | Kind | Date | Applicat No | Kind | Date | Week |
|------------|------|----------|---------------|------|----------|----------|
| EP 1179808 | A1 | 20020213 | EP 2001870169 | A | 20010801 | 200229 B |

Priority Applications (No Type Date): EP 2000870173 A 20000809

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes

EP 1179808 A1 F 16 G06K-019/14

Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT

LI LT LU LV MC MK NL PT RO SE SI TR

Abstract (Basic): EP 1179808 A1

NOVELTY - Document anti-fraud device in which at least two motifs are printed on a support (3) surface. One of the motifs has an ink that reacts to a given light wavelength and emits a given color, the other has an ink that emits the **same color** as the first motif when exposed to the same wavelength. When the motifs are illuminated with a second light wavelength they emit **different color** light to each other.

DETAILED DESCRIPTION - The invention also relates to an optical reader with a system (4) for emitting UV light of two wavelength bands and an optical detector (5) for detecting the light emitted by the fluorescent dye pigments.

INDEPENDENT CLAIMS are made for a document authentication method in which documents are passed beneath reference light sources and then the emitted fluorescent light detected under ultra-violet light to check document authenticity and a document with two motifs on its surface.

USE - Prevention of fraudulent production of banknotes, credit cards, etc. and rapid identification of fraudulent documents.

ADVANTAGE - Use of two motifs with each motif having **two overlapping or integrated designs** that emit light of different wavelengths when illuminated with light of different wavelength makes fraud much more difficult.

DESCRIPTION OF DRAWING(S) - Figure shows a schematic view of the invention.

document medium (3)

bands of motifs printed on banknotes being tested (2a, 2b)

light source (4)

40/9/21 (Item 15 from file: 350) **Links**
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007617977

WPI Acc No: 1988-251909/198836

XRAM Acc No: C88-112299

XRPX Acc No: N88-191596

**Paper resistant to photocopying - has pattern
 of at least two colours which allow reading of black or dark
 coloured information but hinder photocopying**

Patent Assignee: GUNDJIAN A (GUND-I); NOCOPI INT INC (NOCO-N)

Inventor: GUNDJIAN A

Number of Countries: 015 Number of Patents: 005

Patent Family:

| Patent No | Kind | Date | Applicat No | Kind | Date | Week |
|------------|------|----------|-------------|------|----------|----------|
| EP 281350 | A | 19880907 | EP 88301745 | A | 19880229 | 198836 B |
| US 4867481 | A | 19890919 | US 88160048 | A | 19880224 | 198947 |
| EP 281350 | B1 | 19930707 | EP 88301745 | A | 19880229 | 199327 |
| DE 3882155 | G | 19930812 | DE 3882155 | A | 19880229 | 199333 |
| | | | EP 88301745 | A | 19880229 | |
| CA 1320981 | C | 19930803 | CA 559740 | A | 19880224 | 199337 |

Priority Applications (No Type Date): GB 874664 A 19870227

Cited Patents: 4.Jnl.Ref; DE 3424156; GB 1574614; JP 60017778; JP 61023187;
 JP 73090962; US 4522429

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes

EP 281350 A E 12

Designated States (Regional): AT BE CH DE ES FR GB GR IT LI LU NL SE

US 4867481 A 11

EP 281350 B1 E 15 G03G-021/00

Designated States (Regional): AT BE CH DE ES FR GB GR IT LI LU NL SE

DE 3882155 G G03G-021/00 Based on patent EP 281350

CA 1320981 C B42D-015/00

Abstract (Basic): EP 281350 A

Paper which is resistant to photocopying and transmission by telefacsimile has a **pattern** of at least **two** colours repeating in at least one dimension of one side of the paper with frequency of 0.5-50 times per cm., the **colours** contrasting with **black** or **similar** dark **colours** to allow black or dark coloured pattern, and the colours also cooperating with the information to provide a document resistant to photocopying.

USE/ADVANTAGE - The repeat frequency of the pattern and the colours can be chosen to cause good masking of textural, graphical or pictorial information during attempts to photocopy it or to transmit it by facsimile, while allowing easy visual readability.

Dwg.0/7

Abstract (Equivalent): EP 281350 B

Copy-proof security paper preprinted over all or part of its

surface with a coloured **pattern** of at least **two** colours repeating across the face of the paper in at least one dimension, those two colours providing said paper with a sufficient spectral response at one or both ends of the visible spectrum that information displayed over that coloured pattern in black or other dark colour is visible to the naked eye but with insufficient response at wavelengths in the range of about 400 to 700 nm that that information is non-reproduceable by photocopying or telefacsimile machines operating in that range of wavelengths, characterised in that said pattern has a spatial frequency across the sheet in the said at least one dimension in the range 0.5 to 50 times per cm and is made up of at least one pair of colours each having substantially the same spectral response profile over said range of 400 to 700 nm, but with one of the colours making up said pair having a lower spectral response than the other over the whole of that range, that one colour having a spectral response that is substantially the **same** as said **black** or other dark colour over the range 480 to 580 nm thereby providing substantially no contrast therewith over that range.

Dwg.1/7

Abstract (Equivalent): US 4867481 A

Anti-photocopying and anti-telefacsimile paper has a coloured pattern if at least one pair of colours repeating in at least one dimension with spatial frequency of 0.5-50 (1-5) times per cm. The colours of each pair have the same spectral profile but with one colour having a lower spectral response than the other colour over all wavelengths. The **colours** contrast with **black** or **similar** dark **colour** to permit **black** or **similar** dark **colour** information to be visibly readable when applied to the coloured pattern. The colours also cooperate with such information to provide documents resistant to photocopying. ADVANTAGE - Documents are made resistant to photocopying and telephasimile.

(11pp

Title Terms: PAPER; RESISTANCE; PHOTOCOPY; PATTERN; TWO; COLOUR; ALLOW; READ; BLACK; DARK; COLOUR; INFORMATION; HINDERED; PHOTOCOPY.

Derwent Class: F09; G08; P75; P76; P83; P84; P85

International Patent Class (Main): **B42D-015/00**; G03G-021/00

International Patent Class (Additional): B41M-001/20;

B41M-003/14; **G03C-005/08**; G09F-003/03

File Segment: CPI; EngPI

Manual Codes (CPI/A-N): F05-A06; F05-A06B; G02-A05C; G05-F; G06-E; G06-G08

40/9/26 (Item 20 from file: 350) **Links**

Derwent WPIX

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001967982

WPI Acc No: 1978-K7257A/197849

**Marking for security document - using printing in two inks
of same colour but with different infrared
absorption properties**

Patent Assignee: DE LA RUE & CO LTD THOMAS (DELR)

Inventor: COPE R G

Number of Countries: 001 Number of Patents: 001

Patent Family:

| Patent No | Kind | Date | Applicat No | Kind | Date | Week |
|------------|------|----------|-------------|------|------|----------|
| GB 1534403 | A | 19781206 | | | | 197849 B |

Priority Applications (No Type Date): GB 7715957 A 19770418; GB 7625837 A
19760622

Abstract (Basic): GB 1534403 A

The security document, eg an identify card, airline ticket, banknote or cheque has at least one printed **marking** in **each** of at least one pair of inks. The inks of each pair are of the **same colour** when viewed in daylight or under artificial illumination approximating to daylight.

The inks of each pair are however differentiable from one another by reference to the infra-red radiation absorption properties of the **markings**. **Each** ink is visible when the document is illuminated by infra-red radiation. The markings may partially overlap one another.

Title Terms: MARK; SECURE; DOCUMENT; PRINT; TWO; INK; COLOUR; INFRARED; ABSORB; PROPERTIES

Derwent Class: P76

International Patent Class (Additional): **B42D-015/00**

File Segment: EngPI

44/9/5 (Item 2 from file: 350) **Links**

Derwent WPIX

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001255316

WPI Acc No: 1975-D9131W/197515

**Counterfeit protected banknote paper - uses
metameric printing inks which appear different in daylight
and artificial light**

Patent Assignee: SIEGWERK FARBENFAB KELLE (KELL-N)

Number of Countries: 004 Number of Patents: 005

Patent Family:

| Patent No | Kind | Date | Applicat No | Kind | Date | Week |
|------------|------|----------|-------------|------|------|----------|
| DE 2347836 | A | 19750403 | | | | 197515 B |
| FR 2257438 | A | 19750912 | | | | 197544 |
| CH 570881 | A | 19751231 | | | | 197607 |
| DE 2347836 | B | 19770120 | | | | 197704 |
| AT 7407573 | A | 19780915 | | | | 197840 |

Priority Applications (No Type Date): DE 2347836 A 19730922

Abstract (Basic): DE 2347836 B

Banknote paper is protected against counterfeiting by using printing inks with a clearly detectable **metameric** effect. Preferably the inks have a colour distance of at least two Delta-E units, and give the **metameric** effect on passing from daylight to artificial light and back. At least two such inks may be used, with a like sense impression in daylight but different in artificial light, or vice versa. Incandescent light may be used as the artificial **light**. The **printing** may include two partial fields which abut with sharp borders and give the **metameric** effect e.g. as special test fields.

DE 2347836 A

Banknote paper is protected against counterfeiting by using printing inks with a clearly detectable **metameric** effect. Preferably the inks have a colour distance of at least two Delta-E units, and give the **metameric** effect on passing from daylight to artificial light and back. At least two such inks may be used, with a like sense impression in daylight but different in artificial light, or vice versa. Incandescent light may be used as the artificial light. The printing may include two partial fields which abut with sharp borders and give the **metameric** effect e.g. as special test fields.

Title Terms: COUNTERFEIT; PROTECT; BANKNOTE; PAPER; **METAMERIC**;
PRINT; INK; APPEAR; DAYLIGHT; ARTIFICIAL; LIGHT

Derwent Class: P78

International Patent Class (Additional): B44F-001/12; D21H-005/10

File Segment: EngPI

44/9/8 (Item 2 from file: 248) **Links**

Fulltext available through: USPTO Full Text Retrieval Options

PIRA

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00425373 **Pira Accession Number:** 20038747

Title: DEVELOPING METAMERIC PIGMENT COMBINATIONS FOR SECURITY PRINTING

Authors: Legnetti P; Hauser H

Source: Am. Ink Maker vol. 73, no. 7, July 1995, pp 30, 32-34

ISSN: 0002-8916

Publication Year: 1995

Document Type: Journal Article

Language: English

Pira Subfiles: Printing and Publishing (PP); Printing Abstracts (PT)

Journal Announcement: 9512

Abstract: Laser colour copiers make forging and counterfeiting security printed goods easy. Instant, unaided visual recognition of alterations is essential. Research by Ciba Pigments shows that a broad range of special pigments in inks provide original colour images that cannot be duplicated on photocopiers. Use of **metameric** pair shades of Copy Secure Pigments involves either combining two very different shades, or two similar ones. The former look different on the original, and the same when photocopied; the latter are reversed. Such pigments are easy to use and cost-effective. Testing and analysis found pigments deviating optically from copy toners photocopy differently, the highest deviations being in non-process colours. Guidelines are presented for formulating suitable pigment combinations. (9 fig, 1 tab)

Company Names: CIBA GEIGY CORP

Trade Names: COPY SECURE PIGMENTS

Descriptors: COUNTERFEITING; INK FORMULATION; METAMERISM; NEW MATERIAL; PIGMENT; SECURITY PRINTING

Section Headings: Ink Manufacture (8411); Security Printing (8615)

46/9/3 (Item 3 from file: 347) **Links**

JAPIO

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06707897 ****Image available****

METHOD AND DEVICE FOR MECHANICALLY DISCRIMINATING PRINTED MATTER FOR TRUTH OR FALSEHOOD

Pub. No.: 2000-293729 [JP 2000293729 A]

Published: October 20, 2000 (20001020)

Inventor: TAKAOKA SHUHEI

ONOZUKA HIROYOSHI

NISHIO FUTOSHI

SUDO NORIYUKI

Applicant: PRINTING BUREAU MINISTRY OF FINANCE JAPAN

Application No.: 11-098117 [JP 9998117]

Filed: April 05, 1999 (19990405)

International Class: G07D-007/00; B41J-029/00; G01N-021/35; G01N-021/892

ABSTRACT

PROBLEM TO BE SOLVED: To enable everybody to more easily discriminate **metameric** pair printed matters which have only been discriminated visually for truth or falsehood.

SOLUTION: **Metameric** pair printed matters are discriminated for truth or falsehood by means of a mechanical discriminating device A provided with a light projecting section which projects near infrared rays having wavelengths 1 and 2, a light receiving section which receives the reflected or transmitted near infrared rays by means of photodiodes, amplifies the output currents and converts the amplified currents into voltages by means of an amplifier, and converts the output currents into voltages, and an arithmetic section C which compares the two output voltages with each other and displays the discriminated results. Here, the printed matters are discriminated as true metameric pair printed matter when such three discriminating conditions that the output voltage of first ink at the wavelength 1 is larger than that at the wavelength 2 and the difference is significant, the output voltages of second ink at the wavelengths 1 and 2 are equal to each other, and the output voltages of the first and second ink at the wavelength 1 are equal to each other are met by making use of the properties of the first and second ink which are metallic ink in the near infrared region.

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Displaying records #1 through 1 out of 1

Result # 1 Relevance:

Graphical user interface for editing a palette of colors

12-Sep-2000

IPCOM000001487D

English (United States)

A graphical user interface is disclosed for interactively editing a palette of colors in response to signals from a user, such as from a pointing device. The interface provides a color space in a color space window on the user's display and draws each color in the palette in ...

Displaying page 1 of 1 << FIRST | < BACK | NEXT > | LAST >>

Search query: metamerism

Language: English

Published Before: 2-4-2004 (Original publication date)

[New search](#) | [Modify this search](#) | [Search within current results](#)

Search query: (security paper) and ink*

Language: English

Published Before: 2-4-2004

Security Paper

Inadvertent or fraudulent copying of a confidential "don't copy" document can be detected by coating the document with a dye that reacts with the intense imaging light of copier. Most copying machines on the market have a halogen lamp as the source of light. Others use a fluorescent lamp or flush-type light source. To project an image from the document, those lights illuminate the document at a high level of intensity that is much higher than room light. Dyes reactive to intense light are coated or impregnated on all or part of document surface in one of the following processes: 1) A dye dispersed in a binder is activated by the light energy and initiates coloring. 2) A dye dispersed in a binder with a photochemical reaction agent is activated by the agent that transfers light energy to the dye and initiates coloring. 3) A dye dispersed in a binder with a color developer is colored by the developer that absorbs light energy and then reacts with the dye by chemical reaction. The coloring of the dye on the paper indicates that the paper has been exposed to the intense light of the copier. A precaution not to expose to sunlight must be taken, unless the dye distinguishes the copier light from sunlight. Two chemical formulae of dyes that can be employed for the abovementioned purpose are illustrated. Shown on the previous page is a dye consisting of a squarylium nucleus with thiopyrilium end-groups (SQS), and this page illustrates tetradimethyl aminophenyl pentamethine perchlorate (TPMP). The coating on the paper is done before or after printing confidential information. The copying machine usually does not expose papers to be copied to imaging light that is projected on an original document. When a dye appropriate to this purpose can be included in a printing ink, copier developer toner or ink jet printing ink, a separate coating process can be saved.

No records matched your search.

Perhaps you should try a less restrictive query.

Search query: metamerik ink*

Language: English

Published Before: 2-4-2004 (Original publication date)

[New search](#) | [Modify this search](#)

No records matched your search.

Perhaps you should try a less restrictive query.

Search query: optically variable ink

Language: English

Published Before: 2-4-2004 (Original publication date)

[New search](#) | [Modify this search](#)

No records matched your search.

Perhaps you should try a less restrictive query.

Search query: copy-proof paper

Language: English

Published Before: 2-4-2004 (Original publication date)

[New search](#) | [Modify this search](#)

Database last updated 11 October 2005

Results for search query

All = ("security" AND "paper") AND "ink**"

From Jan 1960 To Feb 2004

11 Disclosures found

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| RD ID | Disclosure title | Date |
| 476008 | Optically variable pigments in printing inks and prints | Dec 2003 Journal |
| 443116 | Improved metallic effect using coated papers | Mar 2001 Journal |
| 236029 | Security devices | Dec 1983 Journal |
| 346035 | Color printer features | Feb 1993 Journal |
| 267010 | Protection from photocopying | Jul 1986 Journal |
| 466001 | Printer recommendations based on usage patterns | Feb 2003 Journal |
| 308057 | Reproduction apparatus and method with alphanumeric character-coded highlighting for selective editing | Dec 1989 Journal |
| 187047 | Security document | Nov 1979 Journal |
| 440124 | Application specific messaging | Dec 2000 Journal |
| 420047 | Application specific messaging | Apr 1999 Journal |
| 369021 | Overlaid multichromatic optical codes | Jan 1995 Journal |
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Protection from photocopying

Author: Disclosed Anonymously

Research Disclosure Database Number 267010
(Research Disclosure Journal Number : 26710)

Published in July 1986

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26710

PROTECTION FROM PHOTOCOPYING

Recently it was reported that a system of protection against documents being photocopied had been introduced in Canada. This involved incorporation in the basic paper used for documents, of a chemical that would cause the copies to emerge from the copying machine 'fogged' or virtually obscured. This is a system that involves the use of expensive chemicals and paper and obviously has only limited commercial appeal. The paper is also somewhat intensely and unattractively coloured.

It is now proposed that an alternative system be used. In this a tinted paper would be used with a suitably compounded printing ink so that effectively the two colour components of paper and ink would have almost or even identical colour values which would present to the copying machine a uniform tone or colour value and so prevent an effective copy from being made. Such a printing process or combination should contribute to the production of improved high security documents that would effectively be safer from being copied.

Disclosed anonymously
26710

RD 267010 Jul 1986 1/1 © Kenneth Mason Publications Ltd

Database last updated 11 October 2005

Results for search query

All = "optically" AND "variable" AND "ink"

From Jan 1960 To Feb 2004

3 Disclosures found

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| RD ID | Disclosure title | Date |
| 476008 | Optically variable pigments in printing inks and prints | Dec 2003 Journal |
| 478012 | Method and apparatus for conveying digital information with a digital symbol | Feb 2004 Journal |
| 397078 | Apparatus and method for improved viewing of a halftone image | May 1997 Journal |
| Page: [1] | | Download as XML Text |



Optically variable pigments in printing inks and prints

Author: Dr. R. Rüger, Dr. K.-C. Ullmann, Merck KGaA

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Optically variable pigments in printing inks and prints

1. Introduction

Optically variable pigments (OVP) represent a particular class of interference pigments. Common feature of optically variable pigments, also denominated "goniochromatic pigments", "optically variable lustre pigments" or "colour variable pigments", is their angle dependant colour. Colour travel, Colour shifting and/or colour flops are observed with variation of the angle of view. The use of such pigments in printing inks, also known as optically variable inks (OVI), expands the colour palette of designers and printers beyond the scope of conventional colorants and imparts unique colour effects; colour change and colour flop to printed articles. OVP's and OVI's have therefore found many applications in the printing industry.

2. Materials and structures

The field of optically variable luster pigments has been reviewed by Schmid et. al. in European Coating Journal, ECJ 1997 (7/8) 702 –704, by Seeger and Schmid, Welt der Farben, 2001 (1) p. 10 ff and by Pfaff et al. in Ullmann's Encyclopedia of Technical Chemistry, Sixth Edition, electronic release, Wiley-VCH, Weinheim, 2002, Inorganic Pigments, Chapter 4.3.1.6.

Several types of optically variable pigments are known: Transparent and non-transparent pigments based on thin film interference stacks, as described in US 3,008,844, US 3,627,553, US 4,168,986, US 4,705,356, US 4,779,898, US 5,084,351, US 5,281,480, EP 0 395 410, EP 0 395 410, EP 0 803 549, EP 1 114 102 or US 4,434,010, US 4,705,300 and WO 02/24818, luminescent interference pigments as described in WO 01/60924, cholesteric liquid crystal flake pigments, as described in DE 42 40 743, US 5,599,412, US 5,364,557, US 5,851,604, US 5,824,733 or US 5,362,315 and by Jiang et al. in Optical Security and Counterfeit Deterrence Techniques IV, SPIE 4677, 2002, presented at High Performance and functional Pigments Conference, Jan. 21-23, 2002, Delray Beach, FL, USA; goniochromatic luster pigments based on multiply coated high refractive, non-metallic platelets as described in EP 0 753 545, US 5,958,125, US 6,139,614 and WO 01/34710, goniochromatic pigments based on metallic substrates as described in US 5,763,086, US 5,733,364 and by Trueb, Naturwissenschaftliche Rundschau, 53 (3), 147, 2000, luster pigments with colour travel based on multilayer coated transparent and semitransparent substrates, as described in JP 03-120351 and JP 7-759, transparent or semitransparent multilayer nacreous pigments based on mica or glass flakes as described in DE 196 18 569, DE 197 46 067, DE 196 38 708, DE 199 15 153, DE 199 51 869, DE 199 51 871 or WO 2002/033010, multilayer pearlescent pigments based on opaque or coloured substrates, described in DE 198 17 286 and multicolor effect pigments with strong angle dependant colour and colour flop effects based on synthetic silica flakes of uniform thickness coated with metal oxide layers, metal sulfide layers or semitransparent metal layers, as described in DE 41 34 600, DE 195 15 988, WO 93/08237, WO 97/39065, WO 97/39066, WO 00/17277, and by Teany et. al in Pitture e Vernici 75 (3) 11ff, 1999.

3. Application in printing inks and prints

Due to their unique angle dependant colour effects, optically variable pigments have found multiple applications in printing. The fields of application of these pigments in printing can be grouped into aesthetic prints for decorative purposes, such as high value packaging materials, paper coating, decorative laminate printing, wallpaper printing, textile printing and security printing of optical security and counterfeit deference elements on high value articles such as bank notes, cheques, credit cards, tickets, stamps, personal identity cards, passports, and for brand protection of consumer articles.

3.1 General and decorative applications in printing and paper coating

Among the class of optically variable pigments, interference pigments based on flaky inorganic materials are most important. They resemble in particle shape, particle size ranges, structure and chemical composition to the well known pearlescent pigments. Pearlescent pigments and their application in printing inks have been described, for example in US 3,087,828, issued 1963, and by Greenstein in Pol. Sci. Tech. 10, 193ff, 1969. Today, they are well established materials in the printing industry and their use has been reviewed by J. Weitzel in the book "Perlglanzpigmente", Curt R. Vincentz Verlag, Hannover, 1996, by K Böhm et al., Farbe & Lack 105 (10) 30 – 40, 1999, G. Pfaff and Th. Rathschlag, Paintindia 2002 (4) 65 –72 and in the brochure "Iriodin for the Printing Industry", Merck KGaA, Darmstadt (1998). By anybody skilled in the art, the teachings from these papers can be applied to the use of optically variable pigments in printing applications. Optically variable pigments based on coated platy transparent or semitransparent substrates, in particular pigments based on synthetic silica flakes, can be used in place of pearlescent pigments with common adjustments of the formulations and appropriate consideration of the particles size match.

3.2 Security printing

Terliska, FR 2 429 292, describes a security paper for bank notes and documents which cannot be counterfeited by copying. The patent teaches that originals with angle dependant interference colours cannot be copied with copiers and that copies of documents containing optically variable pigments can be easily distinguished from the original. Since then, lustrous pigments with angle dependant colour printed onto the paper are in use as security elements. This technology is applied to all kinds of security papers and documents, as described, for example, in EP 0 317 514, EP 0 863 815, EP 0 657 297, EP 0 733 230, ZA 9 605 983, US 5,766,738, US 6,114,018, WO 94/24370, JP 2-741741, JP 3-022084, JP 06-313298 or JP 06-255234 and inks as described in US 5,059,245, US 5,171,363, US 5,279,657, US 5,383,995, JP 09267592, WO 94/13489 and WO 00/22049. Almost the whole range of OVP's has been proposed for use in security inks and prints, as described, for example in EP 0 353 544, EP 0 428 933, EP 0 741 170, EP 0 763 074, EP 0 673 319, EP 0 98 043, DE 198 17 286, KR 9614749, WO 95/33009, WO 96/39307, WO 99/20695, WO 00/031571, WO 00/025408, WO 00/09617, WO 00/12634, WO 00/22049, WO 01/29137, WO 01/079365, US 4,428,997, US 5,135,812 and US 6,150,022.

4. Application of optically variable pigments based on synthetic silica flakes in printing and the paper industry

Among the broad scope of optically variable pigments, pigments based on synthetic silica flakes are in particular suitable for uses in the printing and paper industry. Main advantages of the pigments are their chemical inertness, their outstanding colour travel, their low particle thickness of 0.5 – 1 μ with an excellent thickness distribution having only a few percent deviation from the mean thickness. Pigments of this type are marketed by Merck KGaA under the brand name Colorstream® and are described in the papers mentioned under chapter 2 of this disclosure and, for example, by Teaney et al. in European Coatings Journal ECJ 99 (4) p. 90 – 96, Sharrock and Schül, European Coatings Journal ECJ 2000 (1-2), p. 22 – 23, G. Pfaff, Welt der Farben 2000 (1) p. 16- 19 and by M. Meyer, Welt der Farben, 2002, 7+8, p. 6-8.

Due to their excellent physical and chemical durability, optically variable silica flake pigments are very favourable in security inks, printings, laminates and coatings for counterfeit protection of bank notes, credit cards, tickets, cheques, identity cards, value documents, high value packaging and brand protection of consumer articles such as shoes, clothes or consumer electronic articles.

Silica flake pigments can be applied to all kinds of printing inks, such as liquid inks, UV curable inks, paste inks and paper coatings. The liquid inks can be water based, based on water/alcohol mixtures or solvent based. Suitable binders for aqueous inks are acrylates, methacrylates, polyesters and polyurethanes. Binders for solvent based inks are nitrocellulose, ethylcellulose, polyamide, PVC/PVA-copolymers, polyvinylbutyrate, chlorinated rubber, rosin modified phenolic resins, maleinic resins, calcium/zinc-resinate-EHEC, acrylates and mixtures thereof. Solvents which can be used in solvent based inks are ethanol, isopropanol, n-propanol, acetone, ethylacetate, isopropylacetate, n-propylacetate, methoxypropanol, ethoxypropanol, toluene, aliphatic hydrocarbons and mixtures. UV-curable printing inks are basically composed of a binder and a liquid monomer, such as epoxy acrylates, polyurethane acrylates, polyester acrylates as reactive monomers hexanediol diacrylate, di/tripropylene glycol diacrylate, trimethylpropane triacrylate, trimethylolpropane ethoxy triacrylate and mixtures thereof.

Paste inks containing silica flake pigments can further contain rosin modified phenolic resins, maleinic acid modified resins, alkyd resins, linseed/soybean oil based resins, hydrocarbon based resins and mineral oils, linseed oil or soybean oil as solvents.

Paper coatings containing silica flake pigments may further contain starch, protein/casein, polyvinyl alcohol, latexes, carboxymethyl cellulose or acrylate binders. The printing inks may further contain known fillers and rheology modifiers. More information on technology and compositions of printing inks is provided by R. L. Leach, R. J. Pierce, in The Printing Ink Manual, Fifth Edition, Blueprint, London, 1993.

Optically variable silica flake pigments can be combined in inks and paper coatings with any conventional colorant, metal flake pigments and other kinds of effect pigment. Preferably, silica flake based OVP's are printed onto a dark background or in combination with dark, but transparent or translucent colorants.

Optically variable silica flake pigments can be compounded with solvents, surfactants or binders into pigment preparations with improved handling and application properties such as pigment pastes or pearlets, as described by Ullmann, 46th Annual Technical Conference, Oct. 2-4, 2002, National Printing Ink Research Institute, Marco Island, Florida, USA.

Various printing techniques are feasible with silica flake OVP's, such as gravure printing using solvent based liquid inks, flexographic printing using solvent based liquid inks, water based inks or UV-curable inks, offset overprint varnishing with water based or UV-curable inks, screen printing using solvent based screen printing inks, UV-screen printing processes or water based screen printing, offset printing, including sheet fed offset, web offset, UV offset and waterless offset printing.

4.1 Application Examples:

1. Textile Printing

sports clothing, blouses, dresses, shirts,
bed linen, tablecloth, curtains, wall coverings

guide recipe:
water based screen printing

| | |
|-------|---|
| 10% | Colorstream® T 10-01 Viola Fantasy |
| 0.5% | Pigment Green 7 (Flexiverse Green GFD 0701) |
| 15% | butylacrylate |
| 4% | thicker |
| 5% | additives |
| 15.5% | water |
| 50% | ethanol |

2. Wallpaper Printing

wallpapers, coated and uncoated, with and without embossing

guide recipe:
solvent based gravure printing

| | |
|-------|-------------------------------------|
| 10% | Colorstream® T 10 -01 Viola Fantasy |
| 2.5% | Iriodin® 219 |
| 2.5% | Iriodin® 235 |
| 17.5% | modified phenolic resin |
| 12% | chlorinated rubber |
| 2.5% | plasticizer |
| 7.5% | wax dispersion |
| 45.5% | toluene |

3. Decorative Laminate Printing

furniture laminates, flooring, wall covering

guide recipe:
water based gravure printing

10% Colorstream® F10-00 Autumn Mystery
3% Iriodin® 305 Solar Gold
43% protein binder
15% ethanol
30% water

4. Packaging Printing

carton board, papers, plastic film, wood, metal
e. g. shrink sleeves, shrink labels

guide recipe:
solvent based gravure printing

20% T10-01 Colorstream® Viola Fantasy
5% Xirallic® Sunbeam Gold
75% nitrocellulose/ethanol binder

adjustment to print viscosity:
65% base ink (s.a.)
35% ethoxypropanol

5. Paper Coating

high end office paper, gift wrapping paper, paper for business cards
cosmetic packaging, carton board

guide recipe:
direct application

3.6% Colorstream® T 10-01 Viola Fantasy
0.6% Iriodin® 7235 Ultra Green
0.2% Pigment Green 7 (Flexiverse Green GFD 0701)
0.2% Pigment Blue 15:3 (Flexiverse Blue BFD 1531)
20.4% styrene/acrylate copolymer
75% water

Disclosed by Dr. R. Rüger, Dr. K.-C. Ullmann, Merck KGaA

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3. Application in printing inks and prints

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| 15% | butylacrylate |
| 4% | thicker |
| 5% | additives |
| 15.5% | water |
| 50% | ethanol |

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wallpapers, coated and uncoated, with and without embossing

guide recipe:
solvent based gravure printing

| | |
|-------|------------------------------------|
| 10% | Colorstream® T 10-01 Viola Fantasy |
| 2.5% | Iriodin® 219 |
| 2.5% | Iriodin® 235 |
| 17.5% | modified phenolic resin |
| 12% | chlorinated rubber |
| 2.5% | plasticizer |
| 7.5% | wax dispersion |
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furniture laminates, flooring, wall covering

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3% Iriodin® 305 Solar Gold
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15% ethanol
30% water

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e. g. shrink sleeves, shrink labels

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solvent based gravure printing

20% T10-01 Colorstream® Viola Fantasy
5% Xirallic® Sunbeam Gold
75% nitrocellulose/ethanol binder

adjustment to print viscosity:
65% base ink (s.a.)
35% ethoxypropanol

5. Paper Coating

high end office paper, gift wrapping paper, paper for business cards
cosmetic packaging, carton board

guide recipe:
direct application

3.6% Colorstream® T 10-01 Viola Fantasy
0.6% Iriodin® 7235 Ultra Green
0.2% Pigment Green 7 (Flexiverse Green GFD 0701)
0.2% Pigment Blue 15:3 (Flexiverse Blue BFD 1531)
20.4% styrene/acrylate copolymer
75% water

**Disclosed by dr. r. Rüger, Dr. K.-C. Ullmann, Merck KGaA
476008**

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